

Appl. No. 09/998,093
Response B dated January 14, 2004
Reply to Office Action of October 20, 2003

REMARKS/ARGUMENTS

Claims 1-10 are rejected under 35 USC § 103 as being unpatentable over Thum, U.S. Patent 5,194,199, either individually, or in view of Newton, U.S. 3,581,681. Applicants traverse this rejection for the reasons stated hereinafter and respectfully request withdrawal of the rejection and allowance of Claims 1-10.

The invention is a structural reinforcement part for use in automobile applications, which comprises a molded shell having a set, shape and size comprising a polymer wall having an interior and exterior surface, wherein the interior face defines a space within the molded shell. The part further comprises a structural filler material disposed in and substantially filling the space within the molded shell. In contact with the exterior face of the polymer wall is a heat-activated expandable adhesive. The structural filler material does not undergo or require any chemical reaction or expansion, after part installation or during automotive assembly.

Thum discloses inserting a core of lightweight material having a shell of heat-expandable material into a hollow member to provide heat insulating spaces between the shell and the hollow member and immersion coating the assembled core and hollow member with heat causing the shell material to be expanded and fill the spaces. See, col. 2, lines 10-16. It is disclosed that the core is positioned in the hollow member only by local projection (from the hollow member) or the like. See, col. 2, lines 21-24. The hollow member after foaming of the shell of the core produces positive stress connections between the core and the hollow member. See, col. 2, lines 27-33. Note that Thum discloses the necessity of having inwardly directed projections, see Figure 1, reference nos. 8 and 9, which are arranged to position the core in the hollow member before the material is foamed. See col. 3, lines 2-6. When heat is applied, this causes the shell to fill the spaces by reference No. 10 and causes the positive stress connection. See col. 3, lines 22-23.

What Thum does not disclose is a device which has a molded shell having a set, shape and size. Nor does it disclose the use of a heat-activated expandable adhesive. Thum illustrates reinforcing a channel and that the foam or basic part has a square cross-section and it does not disclose a part which is capable of

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being varied in shape and thickness and facilitates any number of integrated design features which a molded shell is capable of, see lines 26-27 on page 2. Furthermore, Thum discloses affixing the reinforcing structure disclosed therein in place by virtue of specifically designing the channel with protrusions to hold the channel in place and then by foaming the foamable coating with heat to create a positively stressed environment wherein the positive stresses hold the channel in place. The reinforcement part claimed by Applicants uses an adhesive to hold the part in place and does not require designing the hollow cavity to be reinforced to have protrusions to hold the part in place. This provides significant advantages as to flexibility of design and ease of placement not provided or disclosed in Thum. Therefore, Thum alone is insufficient to create a case of *prima facie* obviousness in that it does not disclose the use of a heat-expandable adhesive or the use of a molded shell having a size and shape which can be varied to fit the size and shape of the hollow cavity. For this reason, the rejection of the claims over Thum alone is insufficient to establish a case of *prima facie* obviousness.

The secondary reference, Newton, is disclosed because it shows a structure which has a plastic shell containing a foam core. The device disclosed is a pallet used for holding loads and to allow movement of the loads. Newton does not disclose the presence of an adhesive about the surface which is expandable and designed to hold an object in place. Nor does Newton disclose how to reinforce a cavity in an automobile as is the function of Applicants' claimed reinforcement part. Nor does it disclose how to hold a part in place in a cavity in an automobile without the need for protrusions from the cavity to hold the part in place as required by Thum and not required for functioning of Applicants' claimed invention.

The Final Rejection states: "that is inappropriate to attack individually each reference in a combination invention." Applicants respectfully point out that in order to understand propriety of combining two references, the skilled artisan must first understand the complete teachings of both references, the deficiencies in teachings of both references and then evaluate whether based on the complete teachings and deficiencies in teachings relative to the claimed invention, whether it is appropriate for a skilled artisan to read the teachings of the references together. Thum

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was cited for teaching that foam can be placed inside of a stiff plastic structure. The Final Rejection states: "Examiner notes that although Newton is silent about the use of the article as a structural reinforcement insert, Newton expressly teaches that the invention is directed to a lightweight structure for load bearing. (col. 1, lines 33-34), and is believed that load bearing is an inherent property of a structural reinforcement article." As such, Thum and Newton are combinable because they are from the same field of endeavor, i.e., a structural article for load bearing. As such, the Examiner repeats: "(see Paper No. 5, page 4, bottom paragraph) that would had been obvious to one skilled in the art to modify Thum's prefabricated reinforcing core of lightweight material with a lightweight composite of molded shell and foam core, as taught by Newton, motivated by the desire to obtain a shaped core in the general configuration to fit the hollow metal member, and good bonding between the shell and the core (Newton, col. 2, lines 65-68)."

It is disclosed in Thum at col. 1, lines 9-16 that the structural beam is provided to absorb kinetic energy upon impact. The reinforcing structure disclosed in Thum is not a load-bearing structure or used for load bearing. Therefore, the premise behind the statement in the Final Rejection relative to combinability of the references is not proper and the references are not combinable. Furthermore, reference to the instant specification is instructive in that on page 1, at lines 7-12, it is recognized that the automotive industry puts a great deal of importance on reducing the weight of automobiles and parts. Thus, given that preference, one skilled in the art would be motivated generally away from adding weight to a structure unless a sufficient competing advantage is provided. There is nothing in Thum or Newton which would suggest or motivate one skilled in the art to modify the disclosed structures in Thum to achieve the desired claimed features. Note, further, that the problem addressed in Thum is preventing damage to foam in the beam or channel strengthened during assembly. There is no discussion in Newton of how to achieve this objective; therefore, this presents another reason why the teachings of Thum and Newton would be combined, i.e., thus address different problems.

On page 3 of the Official Action, the Final Rejection is stated: "with respect to Applicants' response arguing that 'the Official Action does not contain any

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evidence that molded shells are known in the context of foamed inserts . . . which are useful in proving the structural integrity of a vehicle.” (Remarks, page 6, second full paragraph) the Examiner repeats: “(see Paper No. 5, page 3), that is believed that in forming a lightweight composite of a polymer shell and foamed core is old and well known. Note, also as state of the art, Johnson et al., U.S. 3,859,162, which is directed to composite structures. Johnson teaches that ‘reinforced composite foamed structures have been long been known in the prior art. These generally have been prepared by providing a polymeric shell . . . and subsequently filling the shell with a syntactic or blown foam (col. 3, lines 5-10).” The Final Rejection and First Office Action do not establish that foam filled molded shells provide an advantage in reinforcing in automotive structures. This needs to be viewed in the context that additional weight without providing significant function is unacceptable in an automobile. If Johnson is necessary to establish a case of *prima facie* obviousness, then Johnson should be added to the references specifically cited. Johnson teaches that foam filled polymer composites are known but does not relate to the problem being addressed by the Applicants and does not provide a motivation to use such a structure in the claimed invention. More particularly, Johnson does not provide any motivation to modify the teachings of Thum to get to Applicants’ claimed invention. Furthermore, Johnson provides not teaching or suggestion to use a foamable adhesive on the outer surface of the structure. Johnson provides no teaching or suggestion that the disclosed composite structure can be used to reinforce an automobile as in Applicants’ claimed structure or that a reinforcing structure such as disclosed in Thum should contain both another shell and a foamed filling.

In view of the fact that the combination of references is improper and that the individual and combined teachings of the references fail to teach key claimed features, in particular, the use of a foamable adhesive composition about the outside of the molded structure, and the use of a molded shell of a desired shape adapted to be

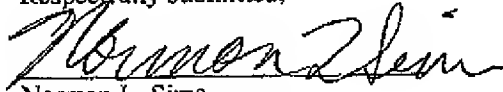
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placed in a cavity which can an irregular shape and filling such a molded shell with foam, no case of *prima facie* obviousness is made out and this Final Rejection must be withdrawn.

Respectfully submitted,



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